EPA has reviewed the narrative in the email from Linda Baker, Integral, to Jennifer Sutter, DEQ, dated 20 July 2015 regarding import material source selection and test results for samples of: 1.5-inch minus crushed rock; potential beach backfill; and potential berm backfill. We reviewed the summary in the email regarding Integral's interpretation of analytical results, and proposed rationale for acceptance of the materials, reviewed the summary tabulation of analytical results in the Excel table, and the pdf of laboratory reports.

Our review objectives were to evaluate: if the sampling techniques were conducted per design and produced representative samples; if the analytical results of potential the import materials meet the soil import criteria that was developed in the Final Design Report; if the collected samples represent stockpiles of material for use at the site; and if the potential import material was suitable for use and protective of the Willamette River.

EPA is providing the following draft comments:

1. Sample frequency and sample representativeness of import material volume is uncertain. The total volume of source materials to be imported are not provided, so it is not clear if the 6 samples that were collected from source materials meet the minimum soil import sampling frequency specified in the Final Design Report. The soil import sampling frequency specified in the Final Design Report is one composite soil sample for every 5,000 cubic yards of imported soil material. Additional sampling should be conducted to assure the design specified methods are followed and meet the minimum soil import sampling frequency, as needed.
2. Sample methods varied resulting in laboratory analyses being performed on discrete grab samples collected from the three source materials, and three composite samples for the analyses of arsenic. Discrete grab samples are not per design and are not as representative as composite sampling, which was specified as the method for characterizing imported soil in the Final Design Report. The composite sampling protocol described in the Final Design Report specifies, "*Stockpile samples shall be collected from five points equidistant around the stockpile at a depth of 6 to 12 in. below the surface of the soil stockpile and at an approximate height of 3 ft above ground surface*." Given the detections of some constituents exceeding the soil import criteria and apparent variability of detections in samples, EPA recommends that composite soil samples be collected and analyzed for all analytes. The composite soil sampling procedure described in the Final Design Report should be followed.
3. Material stockpiles considered for import are not described, named, mapped, and volumes not provided in the email summary. Therefore, it is not possible to determine if the samples collected were representative of the material that could be imported and placed at the site. Information provided indicated that the soil samples were collected by the soil supplier and analyzed by their analytical laboratory. It is not clear at what location the samples were collected and if the composite samples from the beach soil stockpile were collected following the composite sampling protocol described in the Final Design Report. Documentation of sampling should include information on the size of the stockpile sampled, location at the site, depth of sample collection, and procedure used to collect and process the sample. This documentation should be provided in the construction completion report along with analytical laboratory reports.
4. The arsenic detection of 59 milligrams per kilogram (mg/kg) is described as anomalous and a possible laboratory error. Although additional sampling and analysis were completed for arsenic to address this issue, the potential inaccuracy of the initial laboratory result sheds doubt on the accuracy of the analytical results for other constituents. EPA recommends additional evaluation of this issue and sampling with analyses to confirm that the concentrations of all potential constituent of concern for Portland Harbor are below soil import criteria.

5. EPA does not agree with the proposal to use 1.5 inch-minus crushed rock in place of the 4-inch berm backfill per design specifications. If the berm backfill does not meet the soil import criteria and does not meet the design size or gradation specifications, as the initial results indicate, then an additional import source should be identified. To use 1.5-inch minus crush rock instead of the well-graded 4-inch minus aggregate for berm backfill is a significant change from the Final Design. The effects on the stability of the berm, resistance to potential erosion, and the ability to successfully support stabilizing vegetation and trees in this material have not been evaluated. We concur with Integral's conclusion, that at minimum, the landscape designer should be consulted.
6. The review of analytical results from the berm backfill indicates exceedance of Portland Harbor PRGs for dioxin/furans, per RAO3 for sediments. If accepted, use of this material could present a potential compromise to the objective of protecting the Willamette River, and could influence source selection of import material for future riverbank restoration.
7. For the non-detections reported as ND in the Analytical Results Table, we suggest clarifying revisions to allow consistent usability reviews of the data and direct comparisons. It is not clear if the "ND" represents a quantified value that is less than the "reporting limit" (RL), "estimated detection limit" (EDL), or the method detection limit (DL). Non-detections of dioxin/furans are reported to the EDLs in the laboratory report, which are tabulated in the Analytical Results Table as DLs, while the other analyses (polychlorinated biphenyls, organochlorine pesticides, and metals) are reported to the RLs. The non-detections should either be reported as "< EDL" for the dioxin /furans with clarification that the tabulated DL values are EDLs (per analytical method requirements) and "< RL" for the other analyses or "< the actual reporting level" (EDL value for the dioxin/furans and RL value for the other analyses).